

proximity of one crash, at Fort Duncan, Tex., fierce thunder-storm at Pittsburgh, and heavy at Spartanburg, S. C.; 26th, hurricane experienced by a vessel in the vicinity of Bermuda; 27th, high easterly winds during thunder-storm early in the morning at Cape Hatteras and New River, N. C. coast; 28th, heavy gale 150 miles off shore from San Francisco.

## TEMPERATURE OF THE AIR.

The isothermal curves upon chart No. II illustrate the general distribution of the temperature of the air for the present month. From a reference to the table in the lower left-hand corner of the same chart, it will be seen that the average is below that for many years in the Gulf States, Upper Mississippi valley, and at the Pacific coast stations; about the same in Minnesota and the lower Missouri valley; above in the remaining districts, especially in the Lake region and St. Lawrence valley. Minimum and maximum temperatures, respectively, for the month are given for the following stations, viz: Albany, 46°, 93°; Alpena, 42°, 87°; Atlantic City, 55°, 87°; Augusta, 70°, 97°; Boston, 50°, 96°; Bismarck, 42°, 105°; Breckenridge, 37°, 101°; Buffalo, 46°, 87°; Cairo, 63°, 95°; Cape Hatteras, 62°, 85°; Cape May, 57°, 87°; Cheyenne, 34°, 92°; Chicago, 54°, 92°; Cincinnati, 59°, 91°; Cleveland, 46°, 86°; Corsicana, 68°, 101°; Davenport, 53°, 90°; Denver, 44°, 100°; Detroit, 46°, 87°; Dodge City, 52°, 101°; Duluth, 45°, 89°; Eastport, 46°, 83°; Fort Gibson, 64°, 95°; Fort Sully, 48°, 107°; Indianapolis, 48°, 89°; Indianola, 71°, 99°; Jacksonville, 70°, 98°; Key West, 75°, 91°; Leavenworth, 55°, 93°; Lynchburg, 58°, 94°; Malone, 37°, 92°; Marquette, 44°, 91°; Mobile, 71°, 95°; Mt. Washington, 20°, 72°; Nashville, 60°, 95°; New London, 52°, 87°; New Orleans, 73°, 92°; New York, 55°, 90°; North Platte, 42°, 97°; Omaha, 54°, 92°; Oswego, 52°, 90°; Pembina, 36°, 94°; Pittsburgh, 49°, 97°; Pike's Peak, 23°, 58°; Philadelphia, 56°, 91°; Portland, O., 51°, 91°; Salt Lake City, 46°, 95°; San Diego, 60°, 81°; San Francisco, 51°, 78°; Santa Fe, 45°, 89°; Shreveport, 69°, 96°; Vicksburg, 68°, 98°; Virginia City, 31°, 92°; Washington, 53°, 96°; Wilmington, 63°, 97°; Wood's Hole, 55°, 85°; Yankton, 46°, 93°; Yuma, 67°, 107°. The highest were recorded at Indianola on the 1st; Denver, 12th; Dodge City, 18th; Breckenridge and Bismarck, 8th; Fort Sully, 7th; Yuma, 6th; and the lowest at Mt. Washington, 21st; Pike's Peak, 23d; Breckenridge, 25th; Malone, 21st; Pembina, 26th; Cheyenne, 10th; and Virginia City, 9th. The maximum temperatures for Mt. Washington and Virginia City are the highest on record for those stations. During the first part of the month, at the 4:35 p. m. (Washington time) observations, the temperature frequently ranged from 100° to 114° at the stations in western Texas, along the Rio Grande river, while in Arizona the readings varied between 100° and 111°. At Ft. Duncan, Texas, 2 p. m., 2nd, the temperature reached 113°. It fell at Rockford, Iowa, from 83°, at 1 p. m., to 68°, at 2 p. m., on the 18th; at Leavenworth, from 99° to 63°, in half an hour, on 19th; at Memphis, from 92° to 79°, in fifteen minutes, on 22d; at Riley, Ill., decided fall from 24th to 25th, the mean of latter having been 18° lower than that of former; at Cresswell, Kan., fall of 40° on the 24th, and 41° on the 31st.

*Ranges in Temperature.*—At Key West, 16°; San Diego, 21°; San Francisco, 27°; Portland, Or., 41°; Gulf States, 19° to 33°; South Atlantic States, 23° to 34°; Indian Ter., 29° to 34°; Tennessee and the Ohio valley, 30° to 38°; Middle Atlantic coast, 30° to 43°; New England coast, 28° to 44°; interior of Middle States and New England, 42° to 55°; Lower Lake region, 35° to 44°; Upper Lake region, 38° to 47°; Upper Mississippi valley, 31° to 47°; Lower Missouri valley, 36° to 47°; Red River of the North valley, 58° to 64°; Santa Fe, 44°; Kansas and Colorado, 35° to 56°; Salt Lake City, 49°; Wyoming, Montana, and western portions of Nebraska, Minnesota and Dakota, 55° to 64° at Breckenridge.

*Ice and Destructive Frosts* have been reported as follows, viz: morning of the 10th at Coalville, Utah, frost injuring wheat and potato tops; 21st, near Fort Huron, Mich., frost damaging crops; 26th, at Pembina, frost injuring vegetation; 31st, at Coalville, frost and first skin of ice. July 8th, a severe frost occurred at Carson City, Nev., freezing vegetables.

## PRECIPITATION.

Upon chart No. 3 is represented the distribution of the rain-fall and melted snow. The table in the lower left-hand corner of same gives the average precipitation, in the various districts, of the month for this and for many years. It will be observed that the regions in which the rain-fall has exceeded the average for years, viz., the Missouri valley, Upper Mississippi valley, Minnesota, Tennessee and the Ohio valley, generally correspond with those affected by the movements of the lower-pressure areas. The excess in the Western Gulf States, and the normal in the Eastern Gulf States, result from the heavy precipitations at Galveston and Mobile, while there was a deficiency at the majority of the stations, especially through the central portions. The large deficiencies in the Lower Lake region, Middle States, New England and St. Lawrence valley, are due to the fact that the low-pressure areas generally passed to the north of them, and only occasionally extended their influence southward, so as to produce rain in those sections. The following are some of the largest total rain-falls, viz: at Galveston, 10.19 inches; Mobile, 11.53; Goldsboro, N. C., 11.61 (?); Boonsboro, Iowa, 12.44 (?); Guttenburg, Iowa, 10.04; Richmond, Neb., 8.12; Camp Verde, A. Ter., 12.08; Anna, Ill., 9.41; near Cincinnati, 10.25, and Snowville, Va., 9 inches. Stations where not any rain fell are: San José and Campo, Cal., Fort Porter, near Buffalo, Fort Niagara, (at Oswego,) Toronto,

Fort Hall, Idaho Ter., Camp McDermitt, Nev., Yuma and Fort Griffin, Texas. Those recording less than one-tenth (0.1) of an inch are: San Francisco, .01; Andover, Mass., .03; West Point, N. Y., .05; San Diego, Coalville, Utah, and Rio Grande, Texas, .06; Standish, Me., .07, and Carson City, Nev., .08 inches. At Caperville, Va., 4.70 inches of rain is reported to have fallen on the 29th, and at Fort McKavett, Texas, 3.24 inches during the night of the 9th and 10th.

*Snow-fall.*—Light snow fell at Virginia City on the morning of the 9th, on Mt. Washington early during the morning of the 23rd, and on Pike's Peak on the 3rd, 4th, 6th, 13th, 20th, 26th, 27th and 30th. Heavy snow on Pike's Peak on the 18th, 19th and 31st.

*Hail.*—1st, heavy on Pike's Peak; 2nd, at Dubuque, and large at Galveston; 6th, at Vevay, Ind., and heavy on Pike's Peak; 7th, at Honesdale, Penn.; 8th, at Pembina and on Pike's Peak; 9th, at Alto Vista, Va., Atlanta, Ga., and on Pike's Peak; 13th, at Spartanburg, S. C.; 15th, track three miles wide and six long, destroying fruits, vegetables, &c., between Wappinger's Falls and Poughkeepsie, N. Y.; 16th, at North Platte; 17th, Pike's Peak and Pembina; 19th, Le Roy, Kan.; 20th, Pike's Peak; 21st, Denver; 28th, violent at Kanab, Utah; 29th, between Pembina and Fort Garry, track three miles wide, and stones from one to seven inches in circumference; 30th, Pike's Peak; 31st, heavy at Alpena and on Pike's Peak.

*Cloudy Days.*—The number of cloudy days, as reported by the volunteer observers, ranges as follows in the various districts: New England, 0 to 7; Middle States, 0 to 11; South Atlantic States, 1 to 9; Eastern Gulf States, 3 to 9; Western Gulf States, 0 to 5; Arkansas, Tennessee and the Ohio valley, 3 to 13; Lake region, 0 to 9; Northwest, 0 to 11.

*Rainy Days.*—The number of days on which a greater or less quantity of rain fell averages as follows: New England, New York and northern Pennsylvania, 4; South Atlantic and southern portion of the Middle States, 12; Ohio valley, Tennessee and Eastern Gulf States, 15; Western Gulf States, Upper Lake region and western portion of Lake Erie; 11; Northwest, 12.

*Droughts.*—Fla.: Mayport, ground very dry, season unusually sickly. Ill.: Riley, rain needed 23d. Maine: Standish reports drought very severe, streams dry and wells low; West Waterville, driest August ever recorded. New Hampshire: Plaistow, during the month rain upon one day only; Shelburne, very severe, and water scarce; Auburn and Contoocookville, very severe, springs and wells failing. Vermont: reports from all stations show the month to have been exceedingly dry, and crops damaged in some sections. Massachusetts: Amherst, vegetation scorched; Mendon, streams and wells low. New York: Ardenia, corn, potatoes and gardens destroyed, springs and streams low; Albany, severe during almost the entire month; Brookhaven, severe; Elmira, severely felt; Essex county, no rain for weeks, country very dry, and much vegetation destroyed; Flushing, 20th to close of month; Kenisco, gardens destroyed; Malone, severe, no rain for four weeks; Nichols, corn and buckwheat damaged; Pine Plains, crops of all kinds damaged; Port Jervis, very severe, most streams and ponds nearly dry, and no rain since June 30th; St. Lawrence county, very severe, farmers feeding grain to cattle to prevent starvation; Starkey, month dry, no great damage; Wappinger's Falls, long and severe, from July 31st to August 31st, and at close of month not enough water in streams to run factories. New Jersey: Freehold, very severe; Newark, month dry, fruits suffering; New Germantown, month dry, vegetation suffered very much; Vineland, ground dry at close of month. Pennsylvania: Blooming Grove, only one-tenth of an inch of rain; Erie, vegetation suffering greatly; York Sulphur Springs, a narrow region eight or ten miles long, and from five to eight in width during most part of summer almost destitute of rain, while the adjoining country on all sides enjoyed a favorable agricultural season; Tioga, streams very low, probably the driest period in 80 years. Tennessee: local droughts reported in the eastern portion. Virginia: Wytheville, from the 18th. Michigan: Litchfield, gardens injured. Texas: Corsicana, cotton crop greatly injured, and stock suffering for want of water.

*Floods.*—not mentioned above, near Wytheville, Va., about the 1st, sweeping away hay, fencing, &c.; 8th, at Logansport, Ind., a very heavy rain, flooding streets, cellars, &c.; 17th, at Fort Sully, heaviest rain-storm ever known, and on the opposite side of the river the water draining from a canon is reported to have moved out in a solid bank 3 feet deep and 200 feet wide; 26th, near Hay's City, Kan., a water-spout burst over Kill creek, causing destructive floods, and in the mountains east and west of Kanab, Utah, floods damaged roads and ditches; 28th, at Neillsville, Wis., heavy rain, damaging railroads; 31st, on Chalk creek, five miles from Coalville, Utah, a "cloud-burst" was reported, and a solid bank of water, between three and four feet high, came down the stream, destroying dams, &c.

## RELATIVE HUMIDITY.

The average relative humidity for the month ranges, at the Atlantic coast stations, from 72 to 79 per cent.; in the interior of New York and New England, 59 to 69; in Maryland, Virginia and the South Atlantic States, 69 to 75; in the Gulf States and Tennessee, 69 to 78; in the Lake region and Ohio valley, 62 to 78; in the Upper Mississippi and Lower Missouri valleys and Minnesota, 68 to 74; on the plains of Kansas, Nebraska and Dakota, 59 to 64; at the Rocky Mountain stations, 29 to 68; and on the Pacific coast, 64 to 74. *Moist stations:* Atlantic City and Thatcher's Island, average, 79 per cent.; Mobile, 78; St. Marks, Knoxville, Pembina and Cairo, 77; Memphis, Tybee Island, Cape Hatteras, Cape May, Barnegat